

What is claimed is:

1. A method of producing a porous glass-particle-deposited body, the method comprising the steps of:

(a) synthesizing glass particles with a flame issuing from a burner for synthesizing glass particles; and

(b) depositing the glass particles on the surface of a starting member (the surface is referred to as the glass particle deposition surface);

the method being specified by the condition that the glass particle deposition surface has:

(c) a region that is hit by the center portion of the flame; and

(d) another region that has a temperature higher than that of the region hit by the center portion of the flame and that is located at the outside of the region hit by the center portion of the flame.

2. A method of producing a porous glass-particle-deposited body as defined by claim 1, wherein:

(a) the burner for synthesizing glass particles comprises:

(a1) a port for feeding a material gas placed at the center of the burner;

(a2) a port for feeding a combustible gas; and

(a3) at least two tubular ports for feeding a combustion-assisting gas placed such that:

(a3a) at least one virtual concentric circle is drawn with respect to the port for feeding a material gas; and

(a3b) at least two tubular ports for feeding a combustion-assisting gas

are placed on the or each virtual concentric circle;

(b) the burner is specified by the condition that the sum of the cross-sectional areas of the tubular ports for feeding a combustion-assisting gas is 1.7 to 5.5 times the cross-sectional area of the port for feeding a material gas.

3. A method of producing a porous glass-particle-deposited body as defined by claim 2, wherein the flow velocity of the combustion-assisting gas at the tubular port for feeding a combustion-assisting gas is at least 0.7 times and less than 2.0 times the flow velocity of the material gas at the port for feeding a material gas.

4. A method of producing a porous glass-particle-deposited body as defined by claim 2 or 3, wherein the flow velocity of the material gas at the port for feeding a material gas is decreased as the diameter of the porous glass-particle-deposited body being formed increases.

5. A method of producing a porous glass-particle-deposited body as defined by claim 1, wherein the distance between the glass particle deposition surface and the burner for synthesizing glass particles is 150 to 500 mm at the start of the deposition of the glass particles.

6. A burner for synthesizing glass particles, comprising:

- (a) a port for feeding a material gas placed at the center of the burner;
- (b) a port for feeding a combustible gas; and
- (c) at least two tubular ports for feeding a combustion-assisting gas placed such that:

(c1) at least one virtual concentric circle is drawn with respect to the port for feeding a material gas; and

(c2) at least two tubular ports for feeding a combustion-assisting gas are placed on the or each virtual concentric circle;

- 5 the burner being specified by the condition that the sum of the cross-sectional areas of the tubular ports for feeding a combustion-assisting gas is 1.7 to 5.5 times the cross-sectional area of the port for feeding a material gas.